

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Original): A solid polymer electrolyte material made of a copolymer comprising a repeating unit based on a fluoromonomer A which gives a polymer having an alicyclic structure in its main chain by radical polymerization, and a repeating unit based on a fluoromonomer B of the following formula (1):



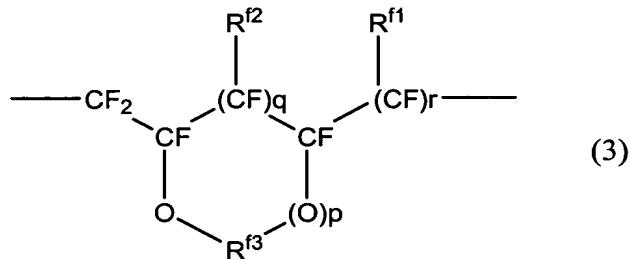
wherein j is 0 or 1, X is a fluorine atom, a chlorine atom or OM {wherein M is a hydrogen atom, an alkali metal atom or a group of  $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$  (wherein each of  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  which may be the same or different, is a hydrogen atom or a monovalent organic group)}, and  $\text{R}^f$  is a  $\text{C}_{1-20}$  polyfluoroalkylene group having a straight chain or branched structure which may contain ether oxygen atoms.

Claim 2 (Currently Amended): The solid polymer electrolyte material according to Claim 1, wherein the fluoromonomer A is a perfluoromonomer, and the fluoromonomer B is represented by the following formula (2):

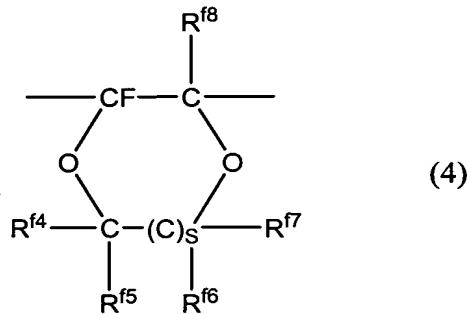


wherein k is an integer of from 0 to 2, m is an integer of from 1 to 12, Y is a fluorine atom or a trifluoromethyl group, and X has the same meaning as X in the above formula (1) where X is a fluorine atom, a chlorine atom or OM {wherein M is a hydrogen atom, an alkali metal atom or a group of  $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$  (wherein each of  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  which may be the same or different, is a hydrogen atom or a monovalent organic group)}.

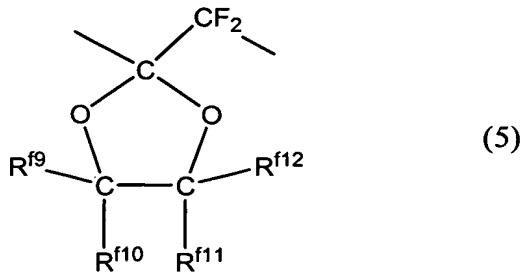
Claim 3 (Original): The solid polymer electrolyte material according to Claim 1, wherein the repeating unit based on the fluoromonomer A is represented by any one of the following formulae (3) to (5):



wherein each of p, q and r which is independent of one another, is 0 or 1, each of R<sup>f1</sup> and R<sup>f2</sup> which may be the same or different, is a fluorine atom, a C<sub>1-5</sub> perfluoroalkyl group or a C<sub>1-5</sub> perfluoroalkoxy group, and R<sup>f3</sup> is a C<sub>1-3</sub> perfluoroalkylene group which may contain a C<sub>1-5</sub> perfluoroalkyl group or a C<sub>1-5</sub> perfluoroalkoxy group, as a substituent;



wherein s is 0 or 1, each of R<sup>f4</sup>, R<sup>f5</sup>, R<sup>f6</sup> and R<sup>f7</sup> which may be the same or different, is a fluorine atom or a C<sub>1-5</sub> perfluoroalkyl group (provided that R<sup>f4</sup> and R<sup>f5</sup> may be connected to form a spiro ring when s is 0), and R<sup>f8</sup> is a fluorine atom, a C<sub>1-5</sub> perfluoroalkyl group or a C<sub>1-5</sub> perfluoroalkoxy group; and



wherein each of  $R^{f9}$ ,  $R^{f10}$ ,  $R^{f11}$  and  $R^{f12}$  which may be the same or different, is a fluorine atom or a  $C_{1-5}$  perfluoroalkyl group.

Claim 4 (Currently Amended): The solid polymer electrolyte material according to Claim 3, wherein the fluoromonomer B is represented by the following formula (2):



wherein k is an integer of from 0 to 2, m is an integer of from 1 to 12, Y is a fluorine atom or a trifluoromethyl group, and X has the same meaning as X in the above formula (1) wherein X is a fluorine atom, a chlorine atom or OM {wherein M is a hydrogen atom, an alkali metal atom or a group of  $NR^1R^2R^3R^4$  (wherein each of  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  which may be the same or different, is a hydrogen atom or a monovalent organic group)}.

Claim 5 (Original): The solid polymer electrolyte material according to Claim 4, wherein the fluoromonomer A is at least one member selected from the group consisting of perfluoro(3-butenyl vinyl ether), perfluoro(2,2-dimethyl-1,3-dioxole), perfluoro(1,3-dioxole), 2,2,4-trifluoro-5-trifluoromethoxy-1,3-dioxole and perfluoro(2-methylene-4-methyl-1,3-dioxolane), and the fluoromonomer B is represented by the following formula (6):



wherein  $k'$  is 0 or 1, X has the same meaning as X in the above formula (1), and Y has the same meaning as Y in the above formula (2).

Claim 6 (Original): The solid polymer electrolyte material according to Claim 5, wherein the fluoromonomer A is perfluoro(2,2-dimethyl-1,3-dioxole), and in addition to the fluoromonomer A and fluoromonomer B, a repeating unit based on tetrafluoroethylene is contained.

Claim 7 (Original): The solid polymer electrolyte material according to Claim 1, which has an ion exchange capacity of from 0.5 to 2.5 meq/g dry resin.

Claim 8 (Currently Amended): The solid polymer electrolyte material according to Claim 1, which is a solid polymer electrolyte material wherein the  $-\text{SO}_2\text{X}$  group in the formula (1) is a  $-\text{SO}_3\text{H}$  group, ~~and which is useful as a material constituting a solid polymer fuel cell.~~

Claim 9 (Original): The solid polymer electrolyte material according to Claim 8, wherein the copolymer has a softening temperature of at least 100°C.

Claim 10 (Currently Amended): The solid polymer electrolyte material according to Claim 2, which is a solid polymer electrolyte material wherein the  $-\text{SO}_2\text{X}$  group in the formula (2) is a  $-\text{SO}_3\text{H}$  group, ~~and which is useful as a material constituting a solid polymer fuel cell.~~

Claim 11 (Currently Amended): The solid polymer electrolyte material according to Claim 3, which is a solid polymer electrolyte material wherein the  $-\text{SO}_2\text{X}$  group in the formula (1) is a  $-\text{SO}_3\text{H}$  group, ~~and which is useful as a material constituting a solid polymer fuel cell.~~

Claim 12 (Currently Amended): The solid polymer electrolyte material according to Claim 4, which is a solid polymer electrolyte material wherein the  $-SO_2X$  group in the formula (2) is a  $-SO_3H$  group, ~~and which is useful as a material constituting a solid polymer fuel cell.~~

Claim 13 (Withdrawn): A liquid composition comprising an organic solvent having a hydroxyl group in its molecule, and a solid polymer electrolyte material made of a copolymer comprising a repeating unit based on a fluoromonomer A which gives a polymer having an alicyclic structure in its main chain by radical polymerization, and a repeating unit based on a fluoromonomer B' of the following formula (1'):

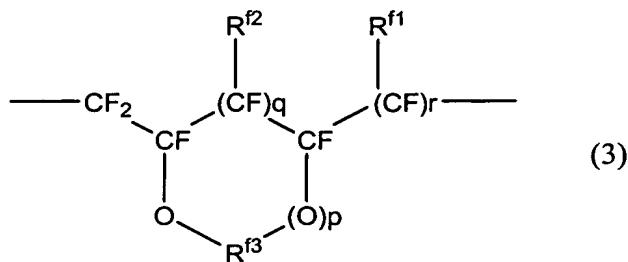


wherein j is 0 or 1, M is a hydrogen atom, an alkali metal atom or a group of  $NR^1R^2R^3R^4$  (wherein each of  $R^1$ ,  $R^2$ ,  $R^3$  and  $R^4$  which may be the same or different, is a hydrogen atom or a monovalent organic group), and  $R^f$  is a  $C_{1-20}$  polyfluoroalkylene group having a straight chain or branched structure which may contain ether oxygen atoms dissolved or dispersed in the organic solvent.

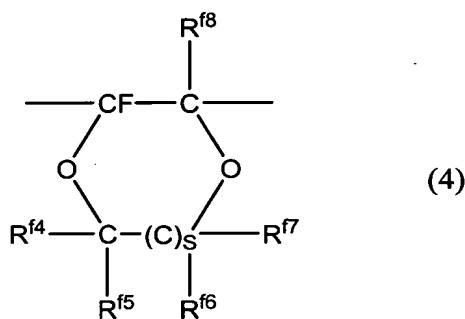
Claim 14 (Withdrawn): The liquid composition according to Claim 13, wherein the fluoromonomer B' is represented by the following formula (2'), and the repeating unit based on the fluoromonomer A is represented by any one of the following formulae (3) to (5):



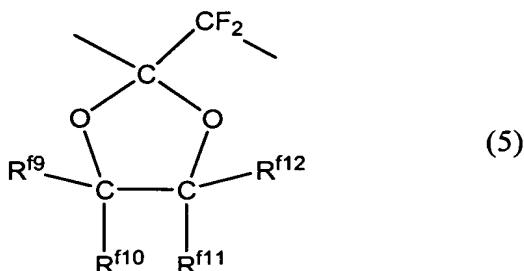
wherein k is an integer of from 0 to 2, m is an integer of from 1 to 12, Y is a fluorine atom or a trifluoromethyl group, and M has the same meaning as M in the above formula (1');



wherein each of p, q and r which is independent of one another, is 0 or 1, each of  $R^{f1}$  and  $R^{f2}$  which may be the same or different, is a fluorine atom, a  $C_{1-5}$  perfluoroalkyl group or a  $C_{1-5}$  perfluoroalkoxy group, and  $R^{f3}$  is a  $C_{1-3}$  perfluoroalkylene group which may contain a  $C_{1-5}$  perfluoroalkyl group or a  $C_{1-5}$  perfluoroalkoxy group, as a substituent;

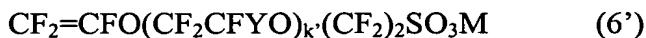


wherein s is 0 or 1, each of  $R^{f4}$ ,  $R^{f5}$ ,  $R^{f6}$  and  $R^{f7}$  which may be the same or different, is a fluorine atom or a  $C_{1-5}$  perfluoroalkyl group (provided that  $R^{f4}$  and  $R^{f5}$  may be connected to form a spiro ring when s is 0), and  $R^{f8}$  is a fluorine atom, a  $C_{1-5}$  perfluoroalkyl group or a  $C_{1-5}$  perfluoroalkoxy group; and



wherein each of  $R^{f9}$ ,  $R^{f10}$ ,  $R^{f11}$  and  $R^{f12}$  which may be the same or different, is a fluorine atom or a  $C_{1-5}$  perfluoroalkyl group.

Claim 15 (Withdrawn): The liquid composition according to Claim 14, wherein the fluoromonomer A is at least one member selected from the group consisting of perfluoro(3-but enyl vinyl ether), perfluoro(2,2-dimethyl-1,3-dioxole), perfluoro(1,3-dioxole), 2,2,4-trifluoro-5-trifluoromethoxy-1,3-dioxole and perfluoro(2-methylene-4-methyl-1,3-dioxolane), and the fluoromonomer B' is represented by the following formula (6'):



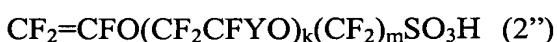
wherein k' is 0 or 1, M has the same meaning as M in the above formula (1'), and Y has the same meaning as Y in the above formula (2).

Claim 16 (Withdrawn): A solid polymer fuel cell comprising an anode, a cathode and a polymer electrolyte membrane disposed between the anode and the cathode, wherein the cathode contains, as a constituting material, a solid polymer electrolyte material made of a copolymer comprising a repeating unit based on a fluoromonomer A which gives a polymer having an alicyclic structure in its main chain by radical polymerization, and a repeating unit based on a fluoromonomer B' of the following formula (1''):

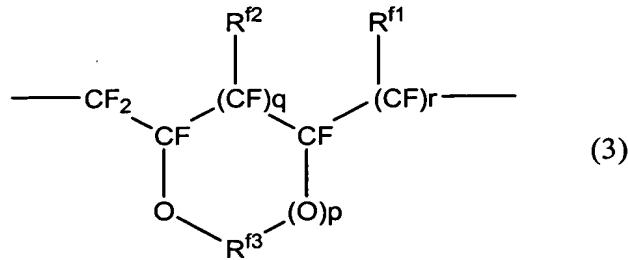


wherein j is 0 or 1, and R<sup>f</sup> is a C<sub>1-20</sub> polyfluoroalkylene group having a straight chain or branched structure which may contain ether oxygen atoms.

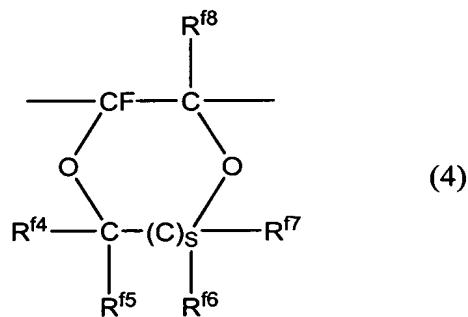
Claim 17 (Withdrawn): The solid polymer fuel cell according to Claim 16, wherein the fluoromonomer B' is represented by the following formula (2''), and the repeating unit based on the fluoropolymer A is represented by any one of the following formulae (3) to (5):



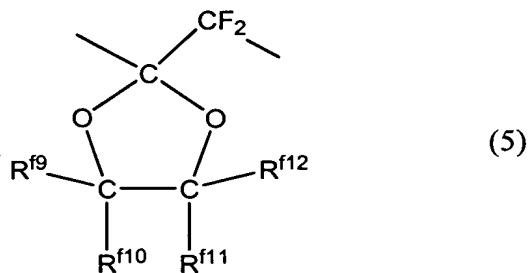
wherein k is an integer of from 0 to 2, m is an integer of from 1 to 12, and Y is a fluorine atom or a trifluoromethyl group;



wherein each of p, q and r which is independent of one another, is 0 or 1, each of R<sup>f1</sup> and R<sup>f2</sup> which may be the same or different, is a fluorine atom, a C<sub>1-5</sub> perfluoroalkyl group or a C<sub>1-5</sub> perfluoroalkoxy group, and R<sup>f3</sup> is a C<sub>1-3</sub> perfluoroalkylene group which may contain a C<sub>1-5</sub> perfluoroalkyl group or a C<sub>1-5</sub> perfluoroalkoxy group, as a substituent;

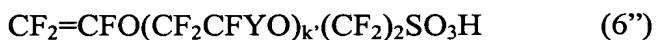


wherein s is 0 or 1, each of R<sup>f4</sup>, R<sup>f5</sup>, R<sup>f6</sup> and R<sup>f7</sup> which may be the same or different, is a fluorine atom or a C<sub>1-5</sub> perfluoroalkyl group (provided that R<sup>f4</sup> and R<sup>f5</sup> may be connected to form a spiro ring when s is 0), and R<sup>f8</sup> is a fluorine atom, a C<sub>1-5</sub> perfluoroalkyl group or a C<sub>1-5</sub> perfluoroalkoxy group; and



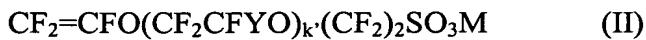
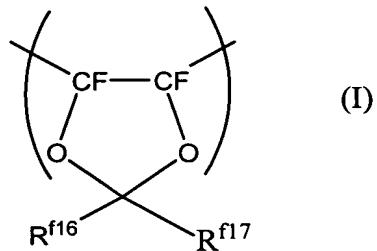
wherein each of R<sup>f9</sup>, R<sup>f10</sup>, R<sup>f11</sup> and R<sup>f12</sup> which may be the same or different, is a fluorine atom or a C<sub>1-5</sub> perfluoroalkyl group.

Claim 18 (Withdrawn): The solid polymer fuel cell according to Claim 17, wherein the fluoromonomer A is at least one member selected from the group consisting of perfluoro(3-butenyl vinyl ether), perfluoro(2,2-dimethyl-1,3-dioxole), perfluoro(1,3-dioxole), 2,2,4-trifluoro-5-trifluoromethoxy-1,3-dioxole and perfluoro(2-methylene-4-methyl-1,3-dioxolane), and the fluoromonomer B' is represented by the following formula (6''):



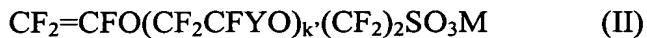
wherein k' is 0 or 1, and Y has the same meaning as Y in the above formula (2).

Claim 19 (Original): A fluoropolymer which is a copolymer consisting essentially of a repeating unit of the following formula (I) and a repeating unit based on a fluoromonomer D of the following formula (II), wherein the content of the repeating unit based on the fluoromonomer D is from 10 to 75 mol%, and the number average molecular weight is from 5,000 to 5,000,000:



wherein each of  $\text{R}^{\text{f}16}$  and  $\text{R}^{\text{f}17}$  which may be the same or different, is a fluorine atom or a trifluoromethyl group,  $k'$  is 0 or 1, Y is a fluorine atom or a trifluoromethyl group, and M is a hydrogen atom, an alkali metal atom or a group of  $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$  (wherein each of  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  which may be the same or different, is a hydrogen atom or a monovalent organic group).

Claim 20 (Withdrawn): A fluoropolymer which is a copolymer consisting essentially of a repeating unit based on perfluoro(3-butenyl vinyl ether) and a repeating unit based on a fluoromonomer D of the following formula (II), wherein the content of the repeating unit based on the fluoromonomer D is from 10 to 75 mol%, and the number average molecular weight is from 5,000 to 5,000,000:



wherein k' is 0 or 1, Y is a fluorine atom or a trifluoromethyl group, and M is a hydrogen atom, an alkali metal atom or a group of  $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$  (wherein each of  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  which may be the same or different, is a hydrogen atom or a monovalent organic group).

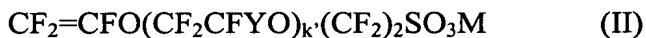
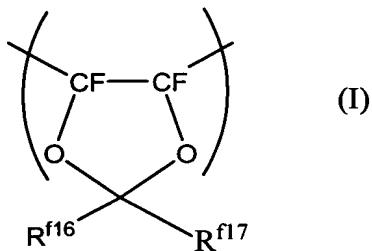
Claim 21 (Withdrawn): A fluoropolymer which is a copolymer consisting essentially of a repeating unit based on perfluoro(2-methylene-4-methyl-1,3-dioxolane) and a repeating unit based on a fluoromonomer D of the following formula (II), wherein the content of the repeating unit based on the fluoromonomer D is from 10 to 75 mol%, and the number average molecular weight is from 5,000 to 5,000,000:



wherein k' is 0 or 1, Y is a fluorine atom or a trifluoromethyl group, and M is a hydrogen atom, an alkali metal atom or a group of  $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$  (wherein each of  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  which may be the same or different, is a hydrogen atom or a monovalent organic group).

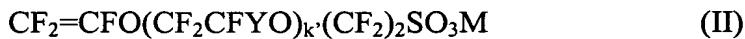
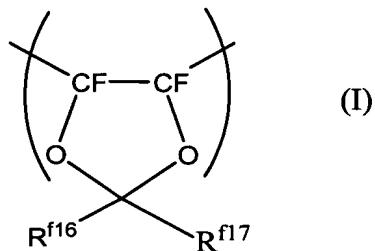
Claim 22 (Withdrawn): A fluoropolymer which is a copolymer consisting essentially of a repeating unit of the following formula (I), a repeating unit based on a fluoromonomer D of the following formula (II), and a repeating unit based on tetrafluoroethylene, wherein the content of the repeating unit of the following formula (I) is from 20 to 60 mol%, the content

of the repeating unit based on tetrafluoroethylene is from 20 to 60 mol%, and the content of the repeating unit based on the fluoromonomer D is from 10 to 40 mol%, and the number average molecular weight is from 5,000 to 5,000,000:



wherein each of  $\text{R}^{\text{f}16}$  and  $\text{R}^{\text{f}17}$  which may be the same or different, is a fluorine atom or a trifluoromethyl group,  $k'$  is 0 or 1, Y is a fluorine atom or a trifluoromethyl group, and M is a hydrogen atom, an alkali metal atom or a group of  $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$  (wherein each of  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  which may be the same or different, is a hydrogen atom or a monovalent organic group).

Claim 23 (Withdrawn): A solid polymer electrolyte membrane which is a membrane made of a polymer electrolyte comprising a copolymer consisting essentially of a repeating unit of the following formula (I), a repeating unit based on a fluoromonomer D of the following formula (II), and a repeating unit based on tetrafluoroethylene, wherein the content of the repeating unit of the following formula (I) is from 20 to 60 mol%, the content of the repeating unit based on tetrafluoroethylene is from 20 to 60 mol%, and the content of the repeating unit based on the fluoromonomer D is from 10 to 40 mol%, and the number average molecular weight is from 5,000 to 5,000,000:



wherein each of  $\text{R}^{\text{f}16}$  and  $\text{R}^{\text{f}17}$  which may be the same or different, is a fluorine atom or a trifluoromethyl group,  $k'$  is 0 or 1, Y is a fluorine atom or a trifluoromethyl group, and M is a hydrogen atom, an alkali metal atom or a group of  $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4$  (wherein each of  $\text{R}^1$ ,  $\text{R}^2$ ,  $\text{R}^3$  and  $\text{R}^4$  which may be the same or different, is a hydrogen atom or a monovalent organic group).

Claim 24 (New): A solid polymer fuel cell comprising the solid polymer electrolyte material as claimed in Claim 8.

Claim 25 (New): A solid polymer fuel cell comprising the solid polymer electrolyte material as claimed in Claim 10.

Claim 26 (New): A solid polymer fuel cell comprising the solid polymer electrolyte material as claimed in Claim 11.

Claim 27 (New): A solid polymer fuel cell comprising the solid polymer electrolyte material as claimed in Claim 12.

DISCUSSION OF THE AMENDMENTS

Claims 1, 3, 5, 6, 7 and 9 are original.

Claims 2, 4, 8 and 10-12 are currently amended.

Claims 13-23 are withdrawn.

Claims 24-27 are new.

Upon entry of the amendment Claims 1-27 will be pending with Claims 1-12 and 24-27 under active consideration.

The amendments to Claims 2 and 4 are supported by original Claim 1.

New Claim 24 is supported by original Claim 8.

New Claim 25 is supported by original Claim 10.

New Claim 26 is supported by original Claim 11.

New Claim 27 is supported by original Claim 12.

No new matter has been added by the amendments.